



司南导航

Product Specification / 产品规范

A300 GNSS Receiver

A300 接收机

2021-4-23

REVISION HISTORY / 修订历史

REVISION / 版本	MODIFICATION / 更改	DATE / 日期
1.0	New Release / 新发	2021-4-23

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I. INTRODUCTION / 简介

A300 is a new generation of universal GNSS receiver independently developed by ComNav Technology Ltd. for the application of geological disaster monitoring industry. The receiver adopts a low-power design, which can automatically switch the operating mode according to the built-in MEMS sensor and the change of the position of the monitoring point, further reducing the power consumption of the monitoring station system. A300 has a wealth of wireless communication methods, which can be matched with the navigation cloud platform to achieve remote monitoring and management of the device, thus reducing the construction and operation costs of the entire monitoring system. Highly integrated integrated design, easy installation, while supporting IP68 waterproof and dustproof, can adapt to a variety of harsh field environment.

A300 是上海司南卫星导航技术股份有限公司针对地质灾害监测行业应用自主研发的新一代普适型 GNSS 接收机。接收机采用低功耗设计，可根据内置的 MEMS 传感器和监测点位置变化来自动切换工作模式，进一步降低监测站系统的功耗。A300 拥有丰富的无线通讯方式，可搭配导航云平台实现对设备的远程监控和管理，进而降低整个监测系统的建设和运营成本。高度集成的一体式设计，安装方便，同时支持 IP68 防水防尘，可适应各种严苛的野外环境。

II. SPECIFICATION OF A300 /A300 技术规范

Following table presents the detailed specification of ComNav A300 GNSS Receiver.

下表中为司南 A300 的详细规范。

Table 1. A300 Receiver Specification

A300 RECEIVER SPECIFICATION/ A300 接收机规范		
GNSS Signals GNSS 信号	Positioning 定位	BDS B1, B2
		GPS L1, L2
		GLONASS L1, L2
Time to First Fix 首次定位时间	Cold Start 冷启动	< 60s
	Hot Start 热启动	< 15s
Reacquisition 信号重捕	< 2s	

A300 RECEIVER SPECIFICATION/ A300 接收机规范		
Accuracy 精度	Pseudorange Precision 伪距精度	BDS: B1=10cm (1 σ), B2=10cm (1 σ) GPS: L1=10cm (1 σ), L2=10cm (1 σ) GLONASS: L1=10cm (1 σ), L2=10cm (1 σ)
	Carrier Phase Precision 载波相位精度	BDS: B1 1mm (1 σ), B2 1mm (1 σ) GPS: L1 1mm (1 σ), L2 1mm (1 σ) GLONASS: L1 1mm (1 σ), L2 1mm (1 σ)
	SPP Accuracy 标准单点定位精度	H $\leq$ 1.5m, V $\leq$ 3m (1 σ , PDOP $\leq$ 4)
	Static Accuracy 静态精度	H: $\pm(2.5+0.5\times10^{-6}\times D)$ mm V: $\pm(5+0.5\times10^{-6}\times D)$ mm
	RTK Accuracy RTK 精度	H: $\pm(8+1\times10^{-6}\times D)$ mm V: $\pm(15+1\times10^{-6}\times D)$ mm
	RTK Initiation time RTK 初始化时间	< 10s (baseline<10km, 基线长小于 10km)
	Initiation Reliability 初始化置信度	> 99.9%
Data Rates 数据速率	Measurements & Position 测量&定位	60s, 15s, 1Hz, 2Hz, 5Hz, 10Hz
Data Formats 输出数据格式	NMEA-0183	GPGGA
	ComNav Binary 司南二进制格式	ComNav Self-Defined 司南自定义
	RTCM3.X	1005, 1007, 1012, 1019, 1020, 1033, 1042, 1045, 1074, 1084, 1094, 1230
Storage 存储	内存 RAM	8G
	存储格式 Storage Format	RTCM3.X
	数据检索 Data Retrieval	APP 设置和 USB 下载
Wireless	4G	4G 全网络

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A300 RECEIVER SPECIFICATION/ A300 接收机规范		
Communication 无线通讯	NB-IoT	物联网
	Bluetooth 蓝牙	Bluetooth Low Energy 低功耗蓝牙
	Radio 电台	LoRa
Communication Protocol 通讯协议	Network 网络	TCP/IP、MQTT、Ntrip
	Serial Port 串口	RS232、RS485
	USB	USB2.0
	Radio 电台	Transparent/South/Mac/TT450S Frequency 频率范围 410-470MHz Baud rate 波特率 9600/19200
Interface 接口	Radio 电台	1 Radio antenna interface, TNC interface 1 个电台天线接口, TNC 接口
	14 core LEMO interface 14 芯 LEMO 数据接口	A DC power round head interface 1 个 DC 电源圆头接口
		A RS232 DB9 interface 1 个 RS232 DB9 接口
		A RS485 DB9 interface 1 个 RS485 DB9 接口
		A USB interface 1 个 USB 接口
		A switch volume interface 1 个开关量接口
	SIM Card Slot SIM 卡槽	2 Nano SIM Card Slot 2 个 Nano SIM 卡槽 (4G+NB-IoT)
Electrical 电气特性	Voltage 供电电压	9V~36VDC
	Power Consumption 功耗	≤2W
	Indicator Light	1*Power light, 1*Satellite light, 1*4G light, 1*Differential lights

A300 RECEIVER SPECIFICATION/ A300 接收机规范		
	指示灯	1*电源灯，1*卫星灯，1*4G 灯，1*差分灯，
Physical 物理参数	Material 材质	Aluminium alloy base + Fiberglass cover 铝合金底座+玻璃钢外罩
	Size 尺寸	Φ 205mm×128mm
	Weight 重量	≤2kg
Environmental 环境要求	Operating Temperature 工作温度	-40℃ — +75℃
	Storage Temperature 储存温度	-55℃ — +85℃
	Working Humidity 工作湿度	Relative humidity 100% 相对湿度 100%无冷凝
	MTBF 平均无故障时间	≥50000h
	Impact 冲击	符合 GJB 150.18A-2009 要求，接收机经过正弦振动参数、平稳随机振动参数条件下的测试后，能正常工作，结构完好。
	Vibration 振动	符合 GJB 150.16A-2009 要求，接收机经过正弦振动参数、平稳随机振动参数条件下的测试后，能正常工作，结构完好。
	Drop 跌落	Resistance to 1 meters free fall 抗 1 米自由跌落
	Protection Level 防护等级	IP68

III. DIMENSION / 尺寸

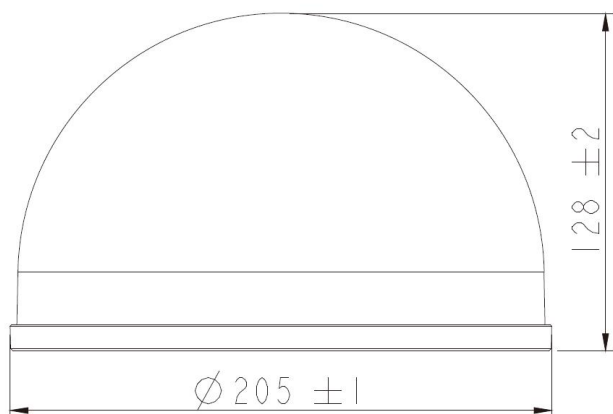
In this section, the base views and the dimension of A300 are provided for customers' further hardware design and installation.

本节提供了 A300 的底座及整机的视图和对应的物理尺寸，便于用户的进一步系统硬件设计和安装。

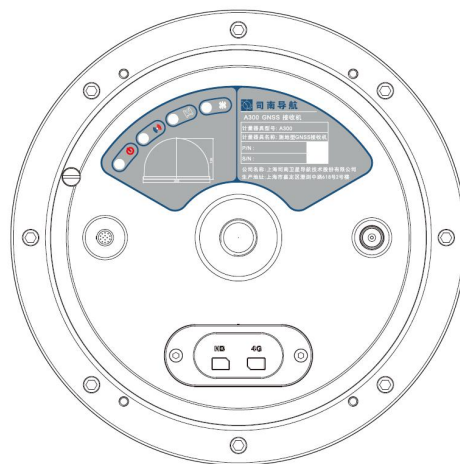


Figure 1. A300 Real Figure

图 1. A300 实物图



Front View/主视图



Bottom View/底视图

Figure 2. A300 View

图 2. A300 视图

IV. PHYSICAL INTERFACE DEFINITION / 硬件接口定义

Physical Interface definitions of A300 are listed in following tables and figures.

本部分的各图表详细定义了 A300 的硬件接口。

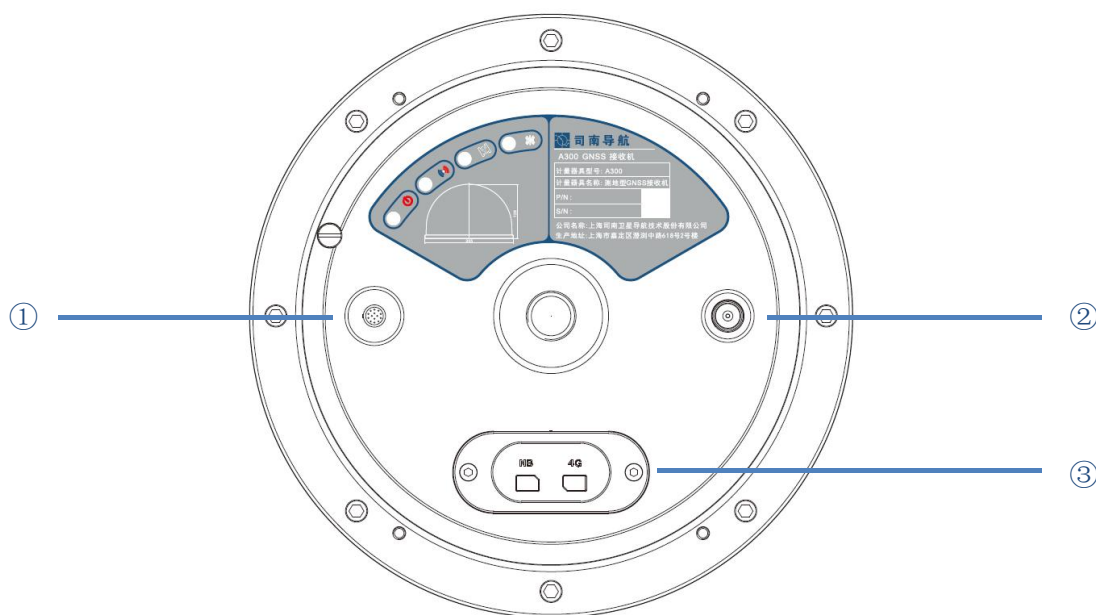


Figure 3. A300 Interface

图 3. A300 接口

Table 2. Physical Interface Definition of A300

NO	NAME	TYPE	DESCRIPTION	
1	Data Interface	I/O	14 core LEMO interface	14 芯 LEMO 接口
2	LoRa		Radio Interface	电台接口
3	SIM		2 Nano SIM	2 个 Nano SIM 卡槽

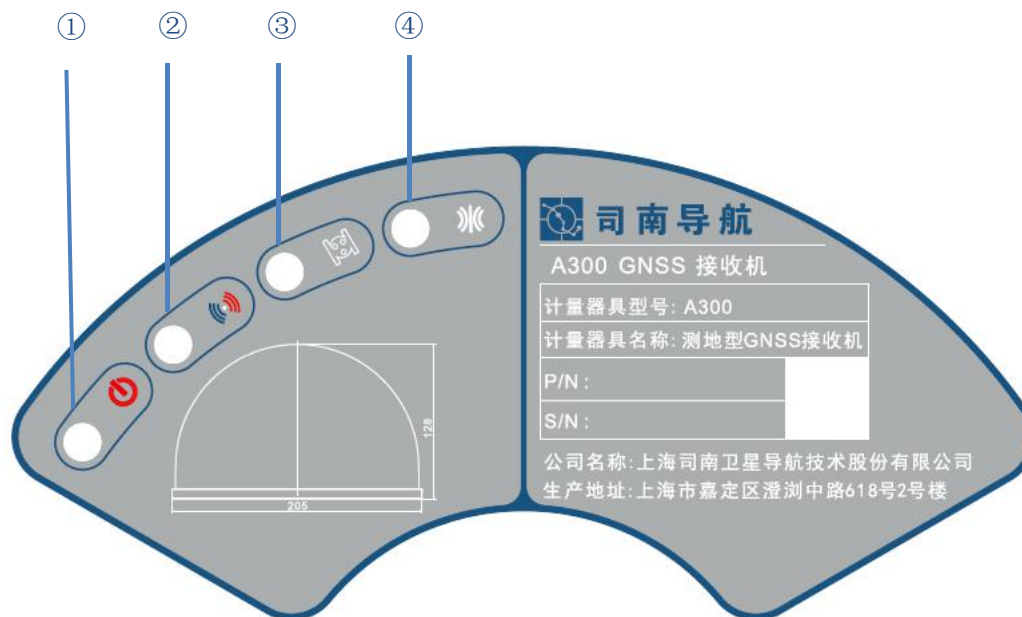


Figure 4. Indicator light of A300

图 4. A300 指示灯

Table 3. Indicator light

NO	NAME	TYPE	DESCRIPTION
1	PWR		Power LED (Red) 电源灯 (红色)
2	4G/NB		4G/NB-IoT LED (Green/Blue) 4G/NB-IoT 指示灯 (红色/蓝色)
3	SAT		Satellite LED (Yellow) 搜星灯 (黄色)
4	RTK		RTK LED (Blue) 差分灯 (蓝色)

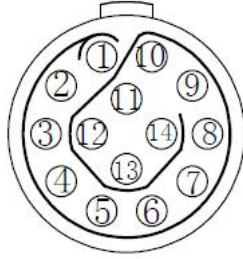


Figure 5. Data Interface of A300 (14 core LEMO interface)

图 5. A300 数据接口（14 芯 LEMO 接口）

Table 4. Physical Interface Definition of Data Interface (14 core LEMO interface)

NO	NAME	TYPE	DESCRIPTION	
1	Data -	I/O	USB Interface data (-)	USB 数据信号(-)
2	Data +	I/O	USB Interface data (+)	USB 数据信号(+)
3	GND	PWR	Ground Reference	参考地
4	J2	On-off	Switch J1	开关量 J1
5	J1	On-off	Switch J2	开关量 J2
6	GND	PWR	Ground Reference	参考地
7	RS485-	I/O	RS485 Interface data (-)	RS485 数据信号(-)
8	RS485+	I/O	RS485 Interface data (+)	RS485 数据信号(+)
9	VCC (12V+)	PWR	DC power	DC +12V 电源供电
10	VCC (12V+)	PWR	DC power	DC +12V 电源供电
11	PWR_GND	PWR	Ground Reference	参考地
12	COM1_RX	I/O	Received Data for COM1 Input	串口 1 输入信号
13	COM1_TX	I/O	Transmitted Data for COM1 Output	串口 1 输出信号
14	GND	PWR	Ground Reference	参考地

V. APPLICATION CONNECTION EXAMPLE / 应用连接示例

In this section, two application connection examples of A300 Receiver are presented in following diagrams. Per the instruction of these diagrams, you could easily build communication connections between receivers and other terminals such as PC, GNSS antenna or radio antenna, and so on.

本部分提供了 A300 接收机的应用连接示例。参照下面的图示，您可以很快速建立接收机和其他终端（如 PC，传感器和服务器等）之间的通讯连接。

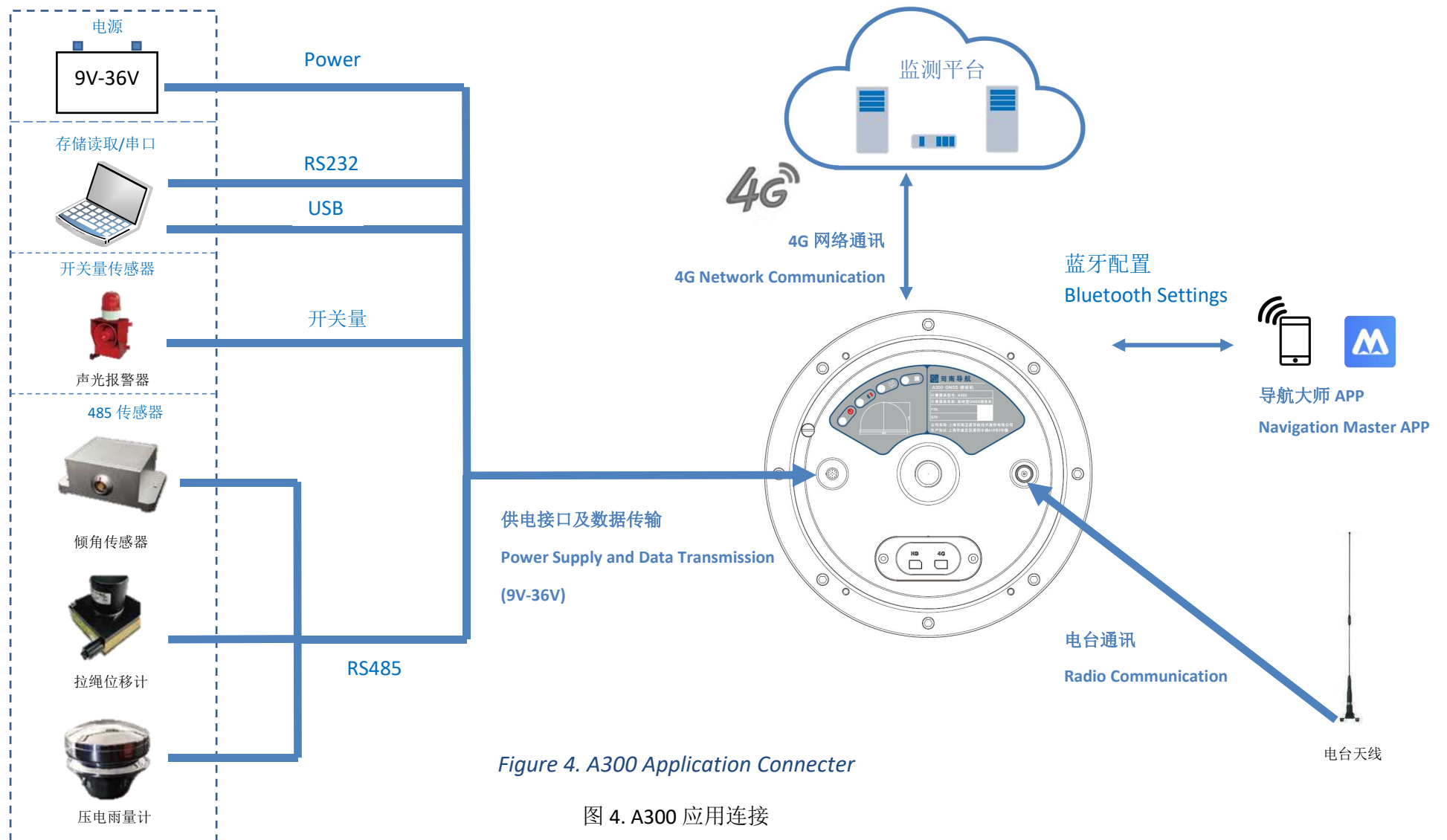


Figure 4. A300 Application Connector

图 4. A300 应用连接